

## Public Information Document

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### **The U.S. Environmental Protection Agency (EPA) Proposes to Issue Variances to Idaho's Water Quality Standards for the discharge of metals from the Cities of Page, Mullan and Smelterville Wastewater Treatment Plants**

EPA proposes to issue variances to the Idaho Water Quality Standards for three municipal sewage treatment plants that discharge to the South Fork Coeur d'Alene River. The proposed variances would authorize the wastewater treatment facilities for the cities of Page, Mullan and Smelterville (the permittees) to discharge cadmium, lead and zinc at higher concentrations than those established by Idaho's water quality criteria to the South Fork Coeur d'Alene River (South Fork) for a maximum of five years. The proposed variances are included and incorporated into the facilities proposed re-issued wastewater discharge permits (NPDES permits).

The proposed variances allow the facilities to maintain current discharge levels during the term of the variance while working towards implementation of measures which will reduce metals concentrations over time. Because metals entering the treatment plants are most likely a result of infiltration and inflow (I/I) of metals contaminated water from the surrounding area leaking into old and cracked intake pipes, specific requirements related to I/I work and investigating treatment options are included in the proposed NPDES permits. During the 5 year term of the variance, the permittees are to make reasonable progress towards attainment of the water quality standards. At the expiration of the variance the permittees are expected to either meet the water quality standards or demonstrate the continued need for a variance.

The proposed variances are based on a demonstration that wastewater treatment controls more stringent than those required by technology based requirements would result in substantial and widespread economic and social impact to these Silver Valley communities. This demonstration and the supporting documentation was submitted by the permittees to EPA and reviewed. EPA has determined that the requirements for obtaining a variance, as required by the federal rule, (40 CFR Part 131.33(d), Federal Register Vol. 62, No. 147, July 31, 1997 page 41188) have been met. Therefore, EPA is proposing to grant variances to the permittees.

### **EPA Invites Comments on the Proposed Variances.**

EPA will consider all significant comments before issuing final variances. Persons wishing to comment on the tentative determinations contained in the proposed variances may do so in writing to the address below:

U.S. Environmental Protection Agency  
Region 10  
1200 Sixth Avenue, OW-131  
Seattle, Washington 98101  
Attn: Lisa Macchio  
phone: toll free 1 800 424-4372 (within Idaho, Oregon,  
Washington and Alaska)  
or (206) 553-1834  
email: [macchio.lisa@epa.gov](mailto:macchio.lisa@epa.gov).

After the comment period closes and all comments have been considered, EPA's Regional Administrator will make a final decision regarding variance issuance.

### **Documents Are Available for Review.**

The proposed variances and related documents can be reviewed at the following offices:

United States Environmental Protection Agency  
Region 10  
1200 Sixth Avenue, OW-131  
Seattle, Washington 98101  
(206) 553-1834 or  
1 (800) 424-4372 (within Idaho, Oregon, Washington and Alaska)

EPA Coeur d'Alene Field Office  
1910 NW Boulevard  
Coeur d'Alene, Idaho 83814  
(208) 664-4588

United States Environmental Protection Agency  
Idaho Operations Office  
1410 North Hilton  
Boise, Idaho 83706  
(208) 378-5746

This public information document can also be found by visiting the EPA Region 10 web site at **[www.epa.gov/r10earth/water.htm](http://www.epa.gov/r10earth/water.htm)**.

For technical questions regarding the proposed variances or public information document, contact Lisa Macchio at (206) 553 1834, or toll free at 1 800 424-4372 or at the following email address: [macchio.lisa@epa.gov](mailto:macchio.lisa@epa.gov)

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## **Background**

In 1997, EPA promulgated a federal rule which established water quality standards applicable to specific waters in the State of Idaho (40 CFR Part 131.33, Federal Register Vol. 62, No. 147, July 31, 1997). As part of this rule making EPA promulgated a cold water biota beneficial use designation for the South Fork Coeur d'Alene River. This rule also set forth requirements and a procedure for EPA to grant variances to the cold water biota use in the South Fork Coeur d'Alene River (40 CFR Part 131.33(d), Federal Register Vol. 62, No. 147, July 31, 1997 page 41188). At present, this federal rulemaking is still effective. Therefore, EPA has the authority to grant variances to water quality standards in the South Fork Coeur d'Alene River.

EPA is following the variance procedures as outlined in 40 CFR at 131.33(d)(4). These procedures, in part, state that EPA's Regional Administrator will publish notice for a proposed variance once EPA has preliminarily determined that grounds exist for granting a variance. This document presents the basis for EPA's preliminary determination and provides notice that EPA is proposing to grant variances to the wastewater treatment facilities of Smelterville, Page and Mullan which discharge to the South Fork Coeur d'Alene River.

A water quality standard variance applies only to the permittee requesting the variance and only to the pollutant(s) specified in the variance for a specific time; the underlying water quality standard otherwise remains in effect. Maintaining the standard rather than changing it assures that further progress is made towards improving water quality and eventually attaining the standard. Since water quality standards are implemented within National Pollutant Discharge Elimination System (NPDES) permits, reasonable progress toward meeting the standards is required within the permit.

The State of Idaho has recently adopted revisions to their water quality standards which have applicability to the South Fork Coeur d'Alene River. Two specific provisions which have relevance to the proposed variance are Idaho's adoption of 1) a beneficial use designation of cold water for the South Fork Coeur d'Alene River and 2) site specific water quality criteria (SSC) for lead, cadmium and zinc for the South Fork Coeur d'Alene River. These revisions were submitted by IDEQ to EPA on August 5, 2002 for review and approval action. These revisions are only effective once EPA has formally approved them. Additionally, once the beneficial use designation has been approved, EPA will then withdraw the federal rule for cold water biota as a beneficial use designation for the South Fork Coeur d'Alene River by publication in the Federal Register. Once these actions have been completed Idaho will have the authority to grant and re-issue variances to the water quality standards in the South Fork Coeur d'Alene River. If the SSC is approved, it will become the applicable Clean Water Act standard for establishing NPDES permit limits on the South Fork Coeur d'Alene River.

## **Process and Criteria for Granting Variances**

The procedure for granting variances in the South Fork Coeur d'Alene River is identified at 40 CFR131.33(d). The rule provides that a variance may be granted if the applicant demonstrates to EPA that attaining the standard is not feasible for one or more of the following reasons:

1. Naturally occurring pollutant concentrations prevent the attainment of the standard.
2. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the standard.
3. Human caused conditions or sources of pollution prevent the attainment of the standard and cannot be remedied or would cause more environmental damage to correct than to leave in place.
4. Dams, diversions or other types of hydrologic modifications preclude the attainment of the standard, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in attainment of the standard.
5. Physical conditions related to the natural features of the water body, unrelated to water quality, preclude attainment of the standard.
6. Controls more stringent than technology-based effluent limitations would result in substantial and widespread economic and social impacts.

The rule additionally specifies that a water quality standard variance will not be granted if:

- standards will be attained by implementing the technology-based effluent limitations and implementing reasonable best management practices for nonpoint source control or
- the variance would likely jeopardize the continued existence of any threatened or endangered species listed under the Endangered Species Act or result in the destruction or adverse modification of such species critical habitat.

## **Basis for the Variances**

The Page and Mullan wastewater treatment plants are operated by the South Fork Coeur d'Alene Sewer District. The City of Smelterville operates a separate wastewater treatment plant. These facilities treat domestic sewage from the communities of Kellogg and Mullan. A substantial portion of the infrastructure in the communities of Kellogg and Mullan is built upon historically-deposited tailings materials, which originated from the mining activity of Idaho's Silver Valley. This includes the collection systems for the sewage treatment plants.

As presented in the following tables, influent data for these facilities indicates that there is a high concentration of metals flowing into these facilities. This is most likely a result of two circumstances. The first being the condition of the collection system piping. This system is old and believed to be cracked in places. The second is the nature of the surrounding material the collection system piping was constructed in. In many areas the piping was built and packed with historical mine tailings deposits. As a result of these two conditions, the water which naturally seeps through the surrounding tailings deposits picks up dissolved metals. This metals contaminated water enters the cracked collection system piping and is carried to the treatment plant along with the domestic untreated sewage entering the system as influent.

Although these facilities were never specifically designed to treat and remove metals in the influent, some, although very limited, removal of metals does occur as a by product of the sewage treatment process. For example, metals will bind to the sewage solids which are then removed by settling and separation of solids prior to the discharge of the liquid effluent.

Tables 1, 2 and 3 present the existing metals influent and effluent data for the facilities along with the percent of metals removed from the effluent as a result of the current treatment. As the data show, there is a significant amount of variability in both influent and effluent concentration for all three metals.

**Table 1**  
**Influent, Effluent and Percent Removal for the Page Wastewater Treatment Plant**  
**(values in ug/L)**

<b>Page</b>									
<b>Date</b>	<b>Cadmium Influent</b>	<b>Cadmium Effluent</b>	<b>% Removal</b>	<b>Lead Influent</b>	<b>Lead Effluent</b>	<b>% Removal</b>	<b>Zinc Influent</b>	<b>Zinc Effluent</b>	<b>% Removal</b>
3/16/99	3.9	2.6	33	17	8	53	725	448	38
3/30/99	7.8	2.7	65	13	8	38	1390	522	62
4/13/99	5.3	2.9	45	14	13	7	1030	611	41
4/27/99	7.3	2.1	71	15	52	- 247	1320	364	72
5/18/99	4.3	2.9	33	11	51	- 364	1090	425	62
6/8/99	5.5	3.2	42	13	39	- 200	1150	464	60
6/22/99	5.3	4.0	25	9	18	- 100	1240	474	62
7/6/99	2.9	2.3	21	12	14	- 17	751	318	58
7/20/99	2.2	0.8	64	270	19	93	551	192	65
8/3/99	1.6	0.8	50	26	6	77	322	106	67
Range of Cadmium removal 21% - 71%				Range of Lead removal 7% - 93%			Range of Zinc removal 38% - 72%		

**Table 2**  
**Influent, Effluent and Percent Removal for the Mullan Wastewater Treatment Plant**  
**(values in ug/L)**

<b>Mullan</b>									
<b>Date</b>	<b>Cadmium Influent</b>	<b>Cadmium Effluent</b>	<b>% Removal</b>	<b>Lead Influent</b>	<b>Lead Effluent</b>	<b>% Removal</b>	<b>Zinc Influent</b>	<b>Zinc Effluent</b>	<b>% Removal</b>
3/16/99	2.3	<0.5	78	55	3	95	529	435	18
3/30/99	4.6	3.6	22	100	5	95	885	898	-1.5
4/13/99	2.3	1.5	35	29	<2.0	95	455	428	59
4/27/99	2	<0.5	75	24	<2.0	92	423	296	30
5/18/99	2.4	<0.5	79	16	<2.0	88	396	212	46
6/8/99	2.7	<0.5	81	29	<2.0	93	440	259	41
6/22/99	1.9	<0.5	74	15	<2.0	87	361	279	23
7/6/99	1.2	<0.5	58	12	3	75	275	110	60

7/20/99	1.2	<0.5	58	32	3	91	458	73	84
8/3/99	1.9	<0.5	74	31	<2.0	94	281	31	89
Range of Cadmium removal 22% - 81%				Range of Lead removal 75% - 95%			Range of Zinc removal 23% - 89%		

**Table 3**  
**Influent, Effluent and Percent Removal for the Smelterville**  
**Wastewater Treatment Plant (values in ug/L)**

Smelterville									
Date	Cadmium Influent	Cadmium Effluent	% Removal	Lead Influent	Lead Effluent	% Removal	Zinc Influent	Zinc Effluent	% Removal
2/16/99	25	15	40	9.6	13.2	-38	2350	1760	25
3/15/99	35	17	53	43.2	12.6	71	2030	1710	16
3/29/99	24	8.7	64	18.1	14.2	52	1910	694	64
4/12/99	38	9.6	75	25	11.5	24	2610	952	64
4/29/99	24	9	63	25.5	31.3	-23	1750	550	69
5/11/99	29.6	7.6	74	43.8	17.5	60	1890	559	70
5/24/99	24	5.8	76	30.4	16.4	46	1790	354	80
6/7/99	29.4	15.2	48	37	19.8	46	3980	875	78
6/21/99	21.7	17	22	13.8	27.4	-99	2700	870	68
Range of Cadmium removal 22% - 76%				Range of Lead removal 24% - 71%			Range of Zinc removal 16% - 80%		

As highlighted in Table 4 below, Mullan, Smelterville and Page have unusually high levels of metals in their effluent when compared to a typical sewage treatment plant in the region (ie., the City of Coeur d'Alene).

**Table 4**  
**Comparison of Average Metals Concentrations from Three Silver Valley**  
**Treatment Plants and the City of Coeur d'Alene (Values in ug/L)**

Facility	Cadmium	Lead	Zinc
Mullan	0.71	2.0	302
Smelterville	11.6	18.2	924.9
Page	2.43	22.8	392
Coeur d'Alene	0.2	2.7	81.6

**Notes:**

- Metals values are total recoverable metal
- Values based on 10 samples from March 1999 through August 1999 for Page and Mullan, 9 samples from February through June 1999 for Smelterville and 10 samples from December 1997 through June 1998 for Coeur d'Alene
- Sources: South Fork Coeur d'Alene River Sewer District, Cities of Smelterville and Coeur d'Alene; Technical Support Document, Coeur d'Alene River Basin TMDL (August 2000)

Table 5 presents a comparison of the metals limits (based on Idaho's water quality criteria) as proposed in the NPDES permits and current discharges. Without additional specific treatment for metals removal, the effluent from the facilities would not meet the water quality-based NPDES permit limits. Page, Mullan, and Smelterville would be required to reduce the metals concentrations by approximately 83% to 98%. In order to accomplish these reductions expensive metals removal treatment would need to be installed at each facility.

**Table 5**

**Comparison of Average Monthly Current Discharges with Water Quality-based Effluent Limits (values in ug/L)**

<b>Facility</b>	<b>Actual Discharge, Current Water Quality Criteria SSC Limit</b>	<b>Cadmium</b>	<b>Lead</b>	<b>Zinc</b>
Mullan	Average Discharge	0.71	2.0	302
	Limits based on Current WQC	0.928	1.73	51.9
	Limits based on SSC	0.936	N/A	95.9
Smelterville	Average Discharge	11.6	18.2	924.9
	Limits based on Current WQC	0.44	0.54	27
	Limits based on SSC	0.39	7.7	60
Page	Actual Discharge	2.43	22.8	392
	Limits based on Current WQS	0.59	0.89	33
	Limits based on SSC	0.79	15	88

**Notes:**

- Metals values are total recoverable
- The actual discharge concentrations were calculated using 10 samples from March 1999 through August 1999 for Page and Mullan and 43 samples from October 1993 through June 1999 for Smelterville.

**Determination of Substantial and Widespread Economic and Social Impacts**

The permittees have requested a variance based on a demonstration that the costs associated with a proposal to install controls to meet Idaho's water quality criteria for specific metals would result in substantial and widespread adverse economic and social impacts. EPA has evaluated these costs and related socioeconomic information based on EPA's "Interim Economic Guidance for Water Quality Standards Workbook" (EPA-823-B-95-002, March 1995).

Given the information provided in the permittee's submissions along with additional estimates of alternative treatment costs provided by EPA, EPA's Regional Economist concurred with each permittee's analysis and conclusion, namely that there would be significant adverse economic impacts if the permittees have to install the necessary wastewater treatment technology in order to comply with water quality criteria for specific metals. (See memo from Elliot Rosenberg, EPA Regional Economist to Lisa Macchio, EPA Water Quality Standards Coordinator, March 20, 2002.)

In addition, taking into account the qualitative issues enumerated in the permittee's submissions further supports the conclusion that there would be widespread adverse social and economic impacts if the Page, Mullen and Smelterville Wastewater Treatment Plants have to implement the proposed metals treatment in order to comply with the water quality criteria.

#### Substantial Adverse Economic Impacts (from EPA's Workbook, Chapter 2.0)

In order to evaluate whether or not a community or communities will incur substantial adverse impacts as a result of implementing the pollution controls, the following five steps are followed:

- Verify Project Costs and Calculate the Annual Cost of the Pollution Control Project
- Calculate Total Annualized Pollution Control Costs Per Household
- Calculate and Evaluate the Municipal Preliminary Screener
- Apply the Secondary Test, and
- Assess Where the Community Falls in the Substantial Impacts Matrix

#### Verify Project Costs and Calculate the Annual Cost of the Pollution Control Project

Proposed project costs associated with relevant treatment processes that were submitted by the permittees were reviewed by EPA and found to be satisfactory.

There are no municipal wastewater treatment plants in Idaho with facilities designed specifically to remove metals from domestic sewage. Based on mining-related studies, EPA believes that there are several treatment processes capable of reducing metals concentrations (to levels required by the water quality standards). In order to select a

particular treatment process and system design it is necessary to conduct laboratory treatability tests of candidate technologies. At this time, no treatability studies are available for Page, Mullan or Smelterville. Nevertheless, it is possible to estimate the costs of a system capable of achieving state water quality standards in the absence of site-specific treatability studies.

EPA reviewed and considered two independent approaches to estimating the cost of additional treatment at the three municipal facilities. Under the first approach, CH2M Hill cost evaluations for the Bunker Hill facility were scaled, using the relative flow rates at Bunker Hill and the sewage treatment plants, to estimate costs at the municipal plants. This approach was used by J–U-B Engineers (consultants to the Sewer District) and Idaho DEQ to estimate treatment costs.

Under the second approach, EPA cost estimation guidance (“Estimating Water Treatment Costs”, EPA-600/2-79-162b) was used to estimate costs of each component of the treatment system based on assumed design parameters. EPA developed alternative estimated costs using this document, with costs adjusted to 2001 dollars. (See memo from Ben Cope, EPA to the file, Re: Cost Estimates for Metals Treatment at Page Mullan and Smelterville)

CH2M Hill has conducted treatability studies for EPA at the Bunker Hill Central Treatment Plant to evaluate candidate technologies for metals removal (CH2M Hill 2000). While recognizing that the Bunker Hill work was conducted on mine drainage and not treated sewage, EPA and the Idaho DEQ believe that this work provides valuable screening information on the costs and performance of candidate technologies. CH2M Hill’s Bunker Hill evaluations indicate that sulfide precipitation/filtration is an effective process to reduce metals to meet state water quality standards. EPA believes that it is reasonable to assume for the purpose of this variance evaluation that treatment equivalent to sulfide precipitation/filtration would be needed at the Page, Mullan and Smelterville plants to achieve the water quality criteria.

The primary annual pollution control costs for the projects are shown in Table 6.

**Table 6**  
**Community Estimates of Proposed Capital and O&M Costs**  
**(corrected for mathematical errors)**

	<u>Page*</u>	<u>Mullen*</u>	<u>Smelterville</u>
(1) Total Capital Costs	28,395,500	7,236,000	710,000**
(2) Total Capital Costs for Page & Mullen	35,631,500		
<b>(3) Annualized Capital Costs</b>	<b>2,738,712</b>		<b>51,093</b>
<hr/>			
(4) Annual O&M Costs	374,000	50,000	24,419**
(a) O&M Costs for Page & Mullen	424,000		

(b) Upgrade O&M Costs Increases For Power and Equipment	<u>48,800</u>	
<b>(5) Total Annual O&amp;M Costs</b>	<b>472,800</b>	<b>16,800</b>
<hr/>		
<b>(6) Total Annual Cost of Pollution Control for Proposed Project [ (3) + (5) ]</b>	<b><u>3,211,512</u></b>	<b><u>67,893</u></b>

\* Page and Mullen submitted a joint, single submission.

\*\* Based on EPA estimate for alternative option for metals removal at Page facility.

In addition, EPA subsequently provided the costs associated with an alternative pollution control process, as shown in Table 7, one purpose being to test how these alternative costs would impact on the communities.

**Table 7**  
**EPA Estimates of Proposed Capital and O&M Costs**

Source: EPA memo

	<u>Page*</u>	<u>Mullen*</u>	<u>Smelterville</u>
(1) Total Capital Costs	16,490,042	4,897,588	4,897,588
(2) Total Capital Costs for Page & Mullen	21,387,630		
<b>(3) Annualized Capital Costs</b>	<b>1,716,199</b>		<b>392,995</b>
<hr/>			
(4) Annual O& M Costs	231,125	70,187	70,187
(a) O&M Costs for Page & Mullen	301,312		
(b) Upgrade O&M Costs Increases For Power and Equipment	<u>48,800</u>		
<b>(5) Total Annual O&amp;M Costs</b>	<b>350,112</b>		<b>70,187</b>
<hr/>			
<b>(6) Total Annual Cost of Pollution Control for Proposed Project [ (3) + (5) ]</b>	<b><u>2,066,311</u></b>		<b><u>463,182</u></b>

\* Page and Mullen submitted a joint, single submission.

### Calculate Total Annualized Pollution Control Costs Per Household

This calculation provides a means to assess the financial burden on each household as a result of the proposed project, as shown in Table 8.

To calculate the *Average Total Pollution Costs per Household*, each community provided in its respective submission the total proposed project capital cost and after deducting any grant monies towards these capital costs calculated an Annualized Capital Cost. Annual Operation and Maintenance (O&M) costs were also provided by the community and also annualized. The capital and O&M annualized costs for the proposed project were added together, that total amount multiplied by the proportion of households in the community expected to pay for this project. The figure is the annual costs per household for this proposed project. Added to this figure is the annual cost per household for current pollution costs. The total of the annual cost per household for

both the current pollution control costs and the proposed project costs is the Total Annual Cost of Pollution Control per Household. The Total Annual Pollution Control Costs per Household (Table 8, line 9) will be used in the next section to help determine whether a community is expected to incur little, mid-range or substantial economic impacts resulting from the proposed project.

**Table 8**  
**Current Total Annual Pollution Control Costs per Household**

	<u>Page &amp; Mullen*</u>		<u>Smelterville</u>	
	<u>Permittee</u>	<u>EPA est.</u>	<u>Permittee</u>	<u>EPA est.</u>
<u>Existing Pollution Control</u>				
(1) Total Annual Costs	666,017		63,344	
(2) Percent of Costs Paid per Household	84%		88%	
(3) Amount of Paid per Household [ (1) x (2) ]	559,839		55,743	
(4) Number of Households	4,546		238	
(5) Annual Cost per Household for Current Pollution Controls [ (3) ÷ (4) ]	123		234	
-----				
<u>Proposed Pollution Control Project</u>				
(6) Total Annual Cost for Proposed Project	3,211,512	2,066,311	67,893	463,182
(7) Amount to be Paid by Households [ (6) x (2) ]	2,697,670	1,735,701	59,746	407,600
(8) Annual Cost per Household	593	382	251	1,713
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<b>(9) Total Annual Pollution Control Costs per Household [ (5) + (8) ]</b>	<b><u>716</u></b>	<b><u>505</u></b>	<b><u>485</u></b>	<b><u>1,947</u></b>

\* Page and Mullen submitted a joint, single submission.

### Calculate and Evaluate the Municipal Preliminary Screener Score

The Municipal Preliminary Screener is one of two tests that are used to determine whether a community can clearly pay for the project without incurring any substantial adverse impacts by looking at the total annual pollution costs per household. The screener is derived as follows:

$$\text{Municipal Preliminary Screener (MPS)} = \frac{\text{Average Total Pollution Control Cost per Household}}{\text{Median Household Income}}$$

The actual calculations are shown below in Table 9.

**Table 9**  
**Total Annual Pollution Control Costs per Household as a Percentage of Median Household Income**

	<u>Page and Mullen</u> *		<u>Smelterville</u>	
	<u>Permittee</u>	<u>EPA est.</u>	<u>Permittee</u>	<u>EPA est.</u>
(1) Total Annual Pollution Control Costs per Household [Table 2, line 9]	716	505	485	1,947
(2) Median Household Income	25,277	25,277	31,662*	27,927**
(3) <b>Municipal Preliminary Screener</b> [ (1) ÷ (2) ]	<b>2.84%</b>	<b>2.00%</b>	<b>1.54%</b> <b>1.74%***</b>	<b>6.98%</b>

\* 1997 data.

\*\* 1999 data.

\*\*\* Calculated using a Median Household Income of \$27,927.

If the average annual cost per household exceeds 2.0 percent of median household income, then the project may place an unreasonable financial burden on many of the households within the community and the community should also look at the Secondary Test (in the next section.) Where the screener value falls between 1.0 and 2.0 percent (i.e., the mid-range) then the community, there could be a mid-range impact and here too the community should also perform the Secondary Test.

For Page and Mullen, the screener value using the communities' data is 2.84% and the screener value based on EPA's estimate for costs is 2.0%. Both screener values indicate that these two communities could face an unreasonable financial burden by implementing the project. The screener value calculated by the City of Smelterville is 1.54%, a mid-range value. However, when EPA used a more current Median Household Income figure then the screener value increased to 1.74%, indicating an increased probability for an adverse impact when a more relevant Median Household Income figure is used. When EPA's estimates are used the resulting screener is 6.98%,

far exceeding the 2.0% threshold for that may indicate the project may place an unreasonable burden on the City of Smelterville.

### Apply Secondary Test

The *Secondary Test* is used to indicate the community's ability to obtain financing for the proposed project and describes the community's financial health. Six indicators are used:

#### Debt Indicators

- Bond Rating - a measure of the community's credit worthiness
- Overall Net Debt as a Percent of Full Market Value of Taxable Property - a measure of debt burden on the community's residents

#### Socioeconomic Indicators

- Unemployment Rate - a measure of the general health of the community
- Median Household Income - a measure of the community's wealth

#### Financial Management Indicators

- Property Tax Revenue as a Percent of Full Market value of Taxable Property - a measure of the funding capacity available to support debt based on the wealth of the community
- Property Tax Collection Rate - a measure of how well local government is administered

When completed, each indicator is then assessed against a scoring table where that indicator is assigned a value: 1 if the indicator is judged to be weak, 2 if the indicator is judged to be mid-range, and 3 for a strong indicator. The values are then added and the sum divided by six (the number of indicators) to get an average score. The Secondary Test scores for the communities are shown in Table 10.

**Table 10**  
**Community Average Secondary Test Scores**

<b>Community</b>	<b>Average Score</b>
Page and Mullen	1.83
Smelterville	1.67

### Assess Where the Community Falls in The Substantial Impacts Matrix

In order to determine if there will be substantial adverse impacts to the community from the proposed project, the results of the *Municipal Preliminary Score* and the *Secondary Test Score* are evaluated together within the Assessment of Substantial Impacts Matrix. In this matrix the *Municipal Preliminary Score* determines the column and the *Secondary Test Score* determines the row. The intersection of the two scores defines a box, and that box within the EPA Guidance indicates the relative magnitude of the impact due to the project, i.e., the impact will not likely be substantial, it will likely be substantial, or the impact is not clear. As shown in Table 11, the matrix indicates that substantial adverse impacts will occur for Page and Mullen. For Smelterville, while the initial indication in the matrix is that the impact is unclear, moving to the next closest box in the matrix based on the screening scores indicates that substantial impacts are likely to occur. The EPA calculation draws the same conclusion from the matrix.

**Table 11**  
**Results from the Assessment of Substantial Impacts Matrix**

	<b>Page and Mullan</b>	<b>Smelterville</b>
<b>Community submission</b>	Will incur substantial impacts	The impact is unclear. (In this case the community moves to the next closest box based on the screening scores, which indicates substantial impacts are likely.)
<b>EPA adjusted figures</b>	Will incur substantial impacts.	Will incur substantial impacts.

EPA's Regional Economist concurs with the findings of the communities. When corrections were made for mathematical errors or more current and relevant information was substituted, the findings based on the matrix more strongly supported the conclusion that substantial adverse impacts would occur if the proposed projects were implemented.

### Determination of Widespread Impacts (EPA's Workbook, Chapter 4)

In the previous sections the discussion focused on the communities with the conclusion that they would have difficulty paying for their respective proposed projects. This part of the analysis is performed to demonstrate that there will be widespread adverse impacts on the community/communities and the surrounding areas. This is a qualitative

analysis, looking at such issues as relative magnitudes of indicators such as levels of unemployment in the community compared the state level, losses to the local economy, decreases in tax revenues, indirect effects on other businesses, and how increases in water treatment fees impact the remaining private entities. The analysis, at a minimum, must define the affected geographic area, consider the baseline economic health of the community and assess how the project will affect the socioeconomic well-being of the community.

Each of the applicants provided an adequate explanation that supports their respective conclusions that the proposed project would have a widespread adverse socioeconomic impact on the community. EPA's Regional Economist concurs with the communities' conclusions.

### **Determination of Alternate Limitations and Variance Conditions**

The variances are conditioned on three sets of requirements. First, alternate limitations for metals are established to insure that facilities discharge at or below current metals concentrations and loadings. Second, the permittees are to complete a screening-level study of potential modifications to current treatment systems to enhance metals removal. Third, specific actions to reduce inflow and infiltration are required in the draft permit to achieve reasonable further progress toward attainment of water quality standards.

#### **Process of Determining Current Metals Discharge**

Because current effluent monitoring information is limited (ten samples for each facility),

EPA used statistical procedures to characterize the potential range of metals concentrations in discharges from these facilities. Specifically, EPA used a procedure from the Technical Support Document for Water Quality-based Toxics Control (TSD) (EPA 1991) to estimate maximum potential effluent discharges in terms of pollutant concentration. (See Memo from Ben Cope to Lisa Macchio)

One simple option for setting a discharge limit for metals is to set the limit at the maximum measured discharge on record. This approach is reasonable and appropriate to use when there is a significant amount of data to estimate the current discharge level. However, because effluent monitoring information is limited to approximately 10 samples for each Silver Valley facility, it is likely that setting a limit based on this small data set would not accurately reflect either the current or maximum discharge concentrations of metals that can be expected. In addition the data has a

large range of variability. Therefore, because the data set is both small and variable the degree of confidence that the data is representative of the actual range of the discharge level is quite low. In order to establish limits that reasonably and accurately reflect the limitations and variability of the available data, a different approach is needed.

The permitting program of EPA Region 10 uses a procedure from the TSD to estimate maximum discharges from limited effluent data when determining whether a water quality-based limitation is warranted for a pollutant of concern. The calculation is based on available sampling information and the desired level of confidence in the estimates of maximum potential discharge. These statistical elements are combined to produce a dimensionless factor (referred to as a “reasonable potential multiplying factor”). This factor is multiplied by the maximum historic discharge to provide an estimate of the maximum potential discharge. The calculation is based on available sampling information, effluent variability and the desired level of confidence in the estimate. The resulting estimates, which EPA proposes to use as permit limitations for the term of the variance, are shown in Table 12.

**Table 12**  
**Proposed Alternate Limits in ug/L**

<b>Facility</b>	<b>Cadmium</b>	<b>Lead</b>	<b>Zinc</b>
Mullan	11	15	3682
Smelterville	37	85	8800
Page	8.8	182	1340

Notes:

- Metals values are total recoverable metal
- Discharge concentrations calculated using “reasonable potential” calculation from Technical Support Document for Water Quality-based Toxics Control (EPA 1991).  
Number of samples = 10, Coefficient of Variation = 0.6.
- Sources: South Fork Coeur d’Alene River Sewer District, City of Smelterville

Impact of Variances to Attaining Water Quality Standards

The proposed Superfund program cleanup plan for the Coeur d’Alene Basin indicates that attainment of the water quality criteria for cadmium, lead and zinc will be a long term effort (on the order of decades). These variances do not preclude the achievement of water quality standards by these facilities over the long term. The variances must be renewed at the end of their terms. EPA and the State of Idaho will

continue to review the environmental and socio-economic conditions in the Basin when considering future variance renewals and establishing future NPDES permit conditions. Variance renewals will be contingent upon the facilities achieving reasonable progress toward water quality standards attainment over time.

The effluent limitations contained in the NPDES permits, during the term of the variances, are designed to insure that the facilities discharge at or below current metals concentrations and loadings. EPA determined that it is reasonable to allow the facilities to discharge at current levels while they make progress on addressing infrastructure upgrades to address the most significant I/I problems with their collection systems and investigate treatment. EPA based this determination on the following:

- S ambient water quality data for the South Fork Coeur d'Alene River indicate that the water quality criteria for cadmium, lead and zinc are not currently attained. Both point and nonpoint sources contribute to the impairment of the surface water quality.
- S information gathered and developed as a part of the Superfund program cleanup strategy for the Coeur d'Alene Basin indicates that attainment of the water quality criteria for cadmium, lead and zinc will be a long term effort. Attaining the water quality criteria for these metals is one of the long term goals of the Superfund cleanup strategy

#### Reasonable Further Progress

EPA guidance for variances in the Water Quality Standards Handbook (Section 5.3) recommends that dischargers applying for a variance be required to demonstrate "reasonable further progress" toward achieving the standard. EPA has included conditions in the permits to achieve progress in two ways. First, the permits require each facility to study opportunities for improving metals removal using the current treatment facilities. Second, the permits require implementation of inflow/infiltration (I/I) controls, with specific requirements and milestones. Reduction in I/I is expected to reduce the metals loadings entering the treatment plant.

#### Treatment Modification Study

The purpose of this study is to identify potential opportunities for improving metals removal using the current treatment facilities. While modest modifications of the existing systems are not expected to achieve state water quality standards, they may nonetheless result in significant reductions.

#### Inflow/Infiltration Controls

EPA believes that significant improvements in the collection system to reduce I/I flows are needed at the facilities and would contribute to reduction of metals in the effluent. Therefore, the variances for each of the three facilities are conditioned upon the following draft permit requirements to reduce I/I flows.

The draft permits would require the facilities to take the following actions in the next five years, consistent with the facility plans to date:

- (1) Re-establish interagency agreements governing collection system management with municipal satellite areas and notify EPA and DEQ within one year of the issuance date of the permit.
- (2) Complete all inspections and investigations of all areas with suspected I/I problems in the service area and submit results to EPA and DEQ within two years of the issuance date of the permit.
- (3) Upgrade collectors, laterals, and manholes in all areas where significant inflow/infiltration problems have been identified within five years of the issuance date of the permit. Submit annual progress reports.

Implementation of I/I controls will also provide additional benefits:

- (1) Improved treatment performance and compliance with limitations for other non-metal pollutants in the wastewater, particularly during high flow events.
- (2) Reduced design flows for sizing of additional or expanded treatment works.
- (3) Reduced operating costs associated with high inflow rates.

### **Variance Term and Renewal**

The term of these variance are five years from the effective date or upon the expiration date of the National Permits Discharge Elimination System permits (ID-002130-0 Page, ID-002129-6 Mullan, and ID-002011-7 Smelterville). The variances may be renewed if the applicants reapply and demonstrate that the use is still not attainable and the metals criteria still can not be achieved. The facilities will likely be reapplying for a variance to Idaho DEQ and not to EPA as it is expected that within the next year Idaho DEQ will have the authority for granting the variances to the South Fork Coeur d'Alene River. As required by the Idaho water quality standards for variances, Idaho DEQ will need to reevaluate the technical basis for the variance and evaluate opportunities for continued progress toward achievement of water quality standards for cadmium,

copper, lead and zinc. Renewal of the variance may be denied if the applicant did not comply with the conditions of the original variance.

### **Endangered Species Act**

Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

EPA requested lists of threatened and endangered species from both NMFS and USFWS in letters dated May 22, 2000. In a letter dated June 28, 2000, the USFWS identified the Gray wolf (*Canis lupus*) as endangered and the Bull trout (*Salvelinus confluentus*), Bald eagle (*Haliaeetus leucocephalus*), and Ute ladies'-tresses (*Spiranthes diluvialis*) as threatened. NMFS indicated that there are no threatened, endangered, proposed or candidate species listed for the SFCDA River.

EPA is currently in the process of consultation with U.S. Fish & Wildlife Service under section 7 of the Endangered Species Act. EPA will be evaluating the potential impacts of the proposed variances on these species and provide this information to the Spokane Office of U.S. Fish & Wildlife Service.

## **Draft Administrative Record Documents**

Letter from City of Smelterville to John Iani, EPA Regional Administrator, Re: NPDES permit Variance Request for City of Smelterville wastewater treatment plant with enclosures. December 7, 2001

Letter from South Fork Coeur d'Alene River Sewer District to John Iani, EPA Regional Administrator, Re: NPDES permit Variance Request for Page and Mullan wastewater treatment plants with enclosures. December 21, 2001.

Memo from Elliot Rosenberg, EPA Regional Economist to Lisa Macchio EPA Water Quality Standards Coordinator. Re: Review of Significant and Widespread Economic Impacts Analysis re: South Fork Coeur d'Alene River Sewer District Water Quality Standards Variance Request for Page and Mullan WWTPs. March 20, 2002.

Memo from Elliot Rosenberg, EPA Regional Economist to Lisa Macchio EPA Water Quality Standards Coordinator, Re: Review of Significant and Widespread Economic Impacts Analysis re: City of Smelterville Water Quality Standards Variance Request for Smelterville WWTP. March 20, 2002.

Memo from Ben Cope, EPA Region 10 Office of Environmental Assessment, to Lisa Macchio EPA, Water Quality Standards Coordinator, Re: Estimation of variance limits for metals. August 26, 2002.

Memo from Ben Cope, EPA Region 10, Environmental Engineer, Office of Environmental Assessment, to the File, Re: Cost Estimates for Metals Treatment at Page, Mullan and Smelterville. August 26, 2002.

Memorandum from John C. Tindall, Idaho Department of Environmental Quality (IDEQ) to Ben Cope, EPA, Re: South Fork Coeur d'Alene River Sewer District, Proposed TMDL Metal Limits and Revised Socioeconomic Impact Evaluation. April 11, 2001.

U.S. Environmental Protection Agency. "Technical Support Document for Water Quality-based Toxics Control (1991).

U.S. Environmental Protection Agency. "Water Quality Standards Handbook. Second Edition." (September 1993)

U.S. Environmental Protection Agency. "Interim Economic Guidance for Water Quality Standards Workbook" (March 1995)

U.S. Environmental Protection Agency. "Estimating Water Treatment Costs. Volume 2: Cost Curves Applicable to 1 to 200 mgd Treatment Plants". (August 1979).

U.S. Environmental Protection Agency. Coeur d'Alene Basin RI/FS, Remedial Investigation Report, Final. October 2001

U.S. Environmental Protection Agency. Coeur d'Alene Basin RI/FS, Feasibility Study Report, Final. October 2001.

U.S. Environmental Protection Agency. Technical Memorandum, Interim Fisheries Benchmarks for the Initial Increment of Remediation in the Coeur d'Alene Basin, Final. September 2001.

U.S. Environmental Protection Agency. Coeur d'Alene Basin Proposed Plan. October 29, 2001.

U.S. Environmental Protection Agency. Final Ecological Risk Assessment, Coeur d'Alene Basin Remedial Investigation/Feasibility Study. Prepared for the U.S. EPA Region 10 by CH2M Hill, Bellevue, WA, and URS Corp., Seattle WA. May 18, 2001

U.S. Environmental Protection Agency and Idaho Department of Environmental Quality. Total Maximum Daily Load for Dissolved Cadmium, Dissolved Lead, and Dissolved Zinc in Surface Waters of the Coeur d'Alene River Basin. August 2000.